

COVALENT JOINING OF DNA STRANDS TO RNA STRANDS

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Abstract of the Disclosure

The present invention provides a method of covalently
5 joining a DNA strand to an RNA strand comprising (a)
forming a topoisomerase-DNA intermediate by incubating a
DNA cleavage substrate comprising a topoisomerase cleavage
site with a topoisomerase specific for that site, wherein
the topoisomerase-DNA intermediate has one or more 5'
10 single-strand tails; and (b) adding to the topoisomerase-
DNA intermediate an acceptor RNA strand complementary to
the 5' single-strand tail under conditions permitting a
ligation of the covalently bound DNA strand of the
topoisomerase-DNA intermediate to the RNA acceptor strand
15 and dissociation of the topoisomerase, thereby covalently
joining the DNA strand to the RNA strand. The present
invention also provides a method of tagging a 5' end of an
RNA molecule. The present invention further provides a
DNA-RNA molecule which has been joined in vitro by the use
20 of a topoisomerase. The present invention also provides a
method of tagging a 5' end of an mRNA. The present
invention provides a method of isolating and cloning full-
length gene sequences using capped mRNA after subtraction of
non-capped RNA.